

MT400

Environment Monitoring Series

Operation and Installation Manual



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1 Overview

1.1 Operation Instructions of Manual

- 1.1.1 It is not allowed to print or disclose any content of this Manual, including pictures and audio products, under any name without the consent of Huchuang Union;
- 1.1.2 The equipment operator may copy some sections of this Operation Manual for internal use only, such as for instructing the user how to deal with emergencies. These sections are clearly listed in the catalogue of this manual;
- 1.1.3 Wuhan Huchuang Union Technology Co., Ltd. reserves the copyright of the Manual. The manual contains the information protected by copyright laws. No part of the Manual is allowed to be copied and sent to the users without the prior written permission of the copyright holder;
- 1.1.4 The contents of the Manual are subject to change without prior notice.

1.2 Overview

MT400 is powered through the power adapter. The 1000mAh lithium battery built in the device can only provide the power supply to the device for a short time when being disconnected from the adapter, so the device cannot work under the condition of disconnection from the adapter for a long time; in addition, the equipment has power failure alarm function.

MT400 environment monitoring main unit is mainly used for laboratory environment monitoring, and the OLED display screen of MT400 displays temperature, humidity, air pressure, PM2.5, PM10, O2, CO2, VOC and HCHO values in real time.

MT400 data upload frequency (default 3 minutes): It uploads the sampled data once every 3 minutes through the wireless transmission function.

1.3 Environmental Requirements

- 1.3.1 Only for indoor use, no high temperature, moisture, water or dust;
- 1.3.2 Atmospheric pressure: 70kPa~105kPa; Working ambient temperature: 0°C~+50°C;
- 1.3.3 Storage ambient temperature: -20°C~+50°C; relative humidity in the working environment: ≤80% (non-condensing);

1.3.4 Power adapter (input: AC100V ~ 240V, 50/60Hz; output: 5V, 2.1A, 10.5W);

1.3.5 No metal objects around the equipment (Keep it away from metal wall).

1.4 Environmental Protection Instructions

1.4.1 MT400 device contains reusable materials, and some components can be recycled after being cleaned and sterilized.

1.4.2 During recycling and handling MT400 device, it is recommended that the company's technical personnel dismantle it and recycle it according to different waste groups;

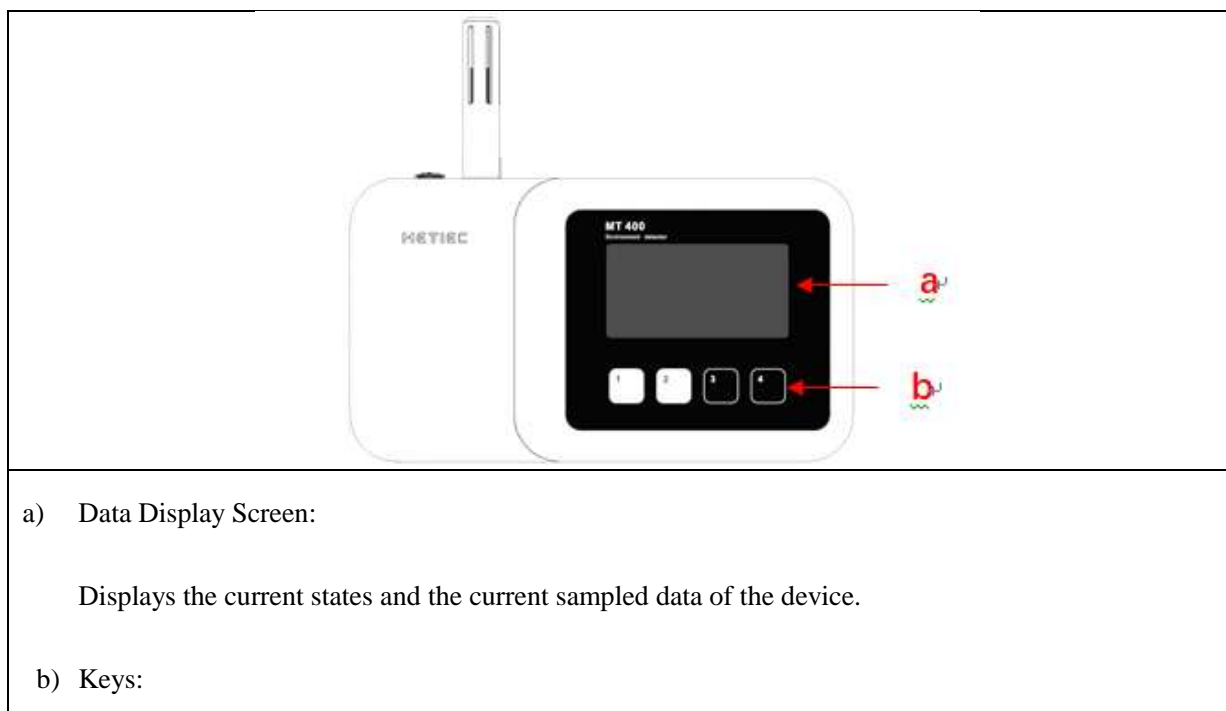
1.4.3 According to national regulations, the compositions of the main raw materials of MT400 equipment shall be are shown in (Table 1).

Table 1 Compositions of Main Raw Materials of MT400

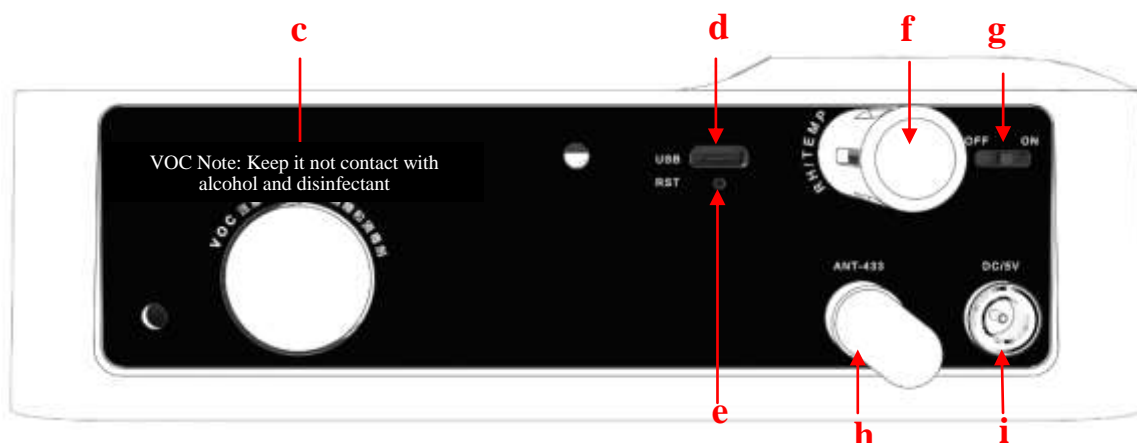
| Name | Composition |
|-----------|---------------------------------|
| Casing | ABS+PC |
| Baseplate | Sheet metal |
| Battery | Polymer lithium battery |
| PCB | Including electrical components |

2 Structure Features and Equipment Parameters

2.1 Structure Features



Push-type buttons; set or modify the equipment parameters through button operations.



c) Sampling interface of VOC sensor;

d) USB interface;

e) Reset Button (Pin-socket type):

Press this button to forcibly restart the equipment (the factory setting shall not be reset) when the equipment breaks down;

f) Sampling interfaces of humidity, temperature and gas pressure sensors;

g) Power toggle switch:

The device can be powered ON normally only when the toggle switch is turned to ON position;

h) 433MHz antenna interface:

Connected with 433 MHz external antenna;

i) Charging port:

Connected with a 5V/2A power adapter.

2.2 Equipment Parameters

Table 2 MT400 Performance Parameters

| Item | Parameter |
|--------------------|-------------------------|
| Overall dimensions | 162mm*92mm*50mm (L*W*H) |

| | |
|---|--|
| Weight | 550g |
| Transmission method | Wireless |
| Work frequency | 433MHz |
| Transmission distance | No more than 1200 m in open area, no more than 300 m inside buildings |
| Power failure alarm | Audible and visual alarm |
| Battery | 1000mAh, providing the power supply for more than 2 hours after power failure in fully charged state |
| Display screen | 2.42 inches |
| O ₂ concentration test range | 0~30% |
| O ₂ concentration test accuracy | ±0.2% |
| CO ₂ concentration test range | 0~0.5% |
| CO ₂ concentration test accuracy | ±0.05% |
| Humidity test range | 0~100% (Non-condensing) |
| Humidity test accuracy | ±1.5% |
| Temperature test range | 0~50°C |
| Temperature test accuracy | 0.4°C |
| Gas pressure test range | 300~1250mbar |
| Gas pressure test accuracy | ±50Pa (±0.5mbar) |
| VOC test range | 0~10ppm |
| VOC test accuracy | ±5% |
| PM10 test range | 0~500ug/m ³ |
| PM10 test accuracy | ±10ug/m ³ (0~100ug/m ³) |
| PM2.5 test range | 0~500ug/m ³ |
| PM2.5 test accuracy | ±10ug/m ³ (0~100ug/m ³) |
| Formaldehyde test range | 0~2mg/m ³ |
| Formaldehyde test accuracy | ±0.1mg/m ³ |
| Power supply mode | DC 5V 2A |
| Operating temperature of equipment | 0°C ~ +50°C |

3 Basic Operation Instructions

3.1 Parts List

Table 4 MT400 Parts List

| Name | Specification/ Quantity |
|---------------|-------------------------|
| Power adapter | DC5V/2A |

| | |
|---------------------------|-----------------|
| Power wire | 1 |
| Antenna | 1 |
| Warranty card | 1 |
| Certificate of Conformity | 1 |
| Operation Manual | 1 |
| Packing List | 1 |
| Magic tape | 75mm*25mm, 8pcs |

3.2 Precautions before Installation



Before installation, please check the Parts List to ensure that the parts are complete;

Check whether the product is damaged.

The transmission distance of MT400 should be limited and not exceed 3 rooms indoor.

3.3 Installation Method

3.3.1 Laid Flat

Choose a fairly empty space, and keep it laid flat on the desktop (the default installation method). As shown in the following figure:



Note: Try to keep the antenna away from metal objects, otherwise the transmission of wireless signals will be affected.

3.3.2 Wall-Mounting

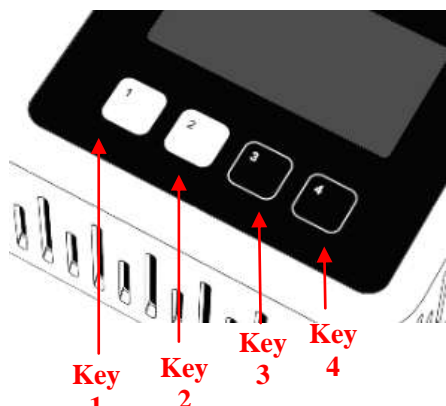
Select a relatively open smooth wall, paste 4 pieces of MT400 special magic tapes on the wall, and then paste another 4 pieces of MT400 special magic tapes on the baseplate of MT400, and then stick magic tapes together.

Note: Try to keep the antenna away from metal objects, otherwise the transmission of wireless signals will be affected.

3.4 Power-On for Use

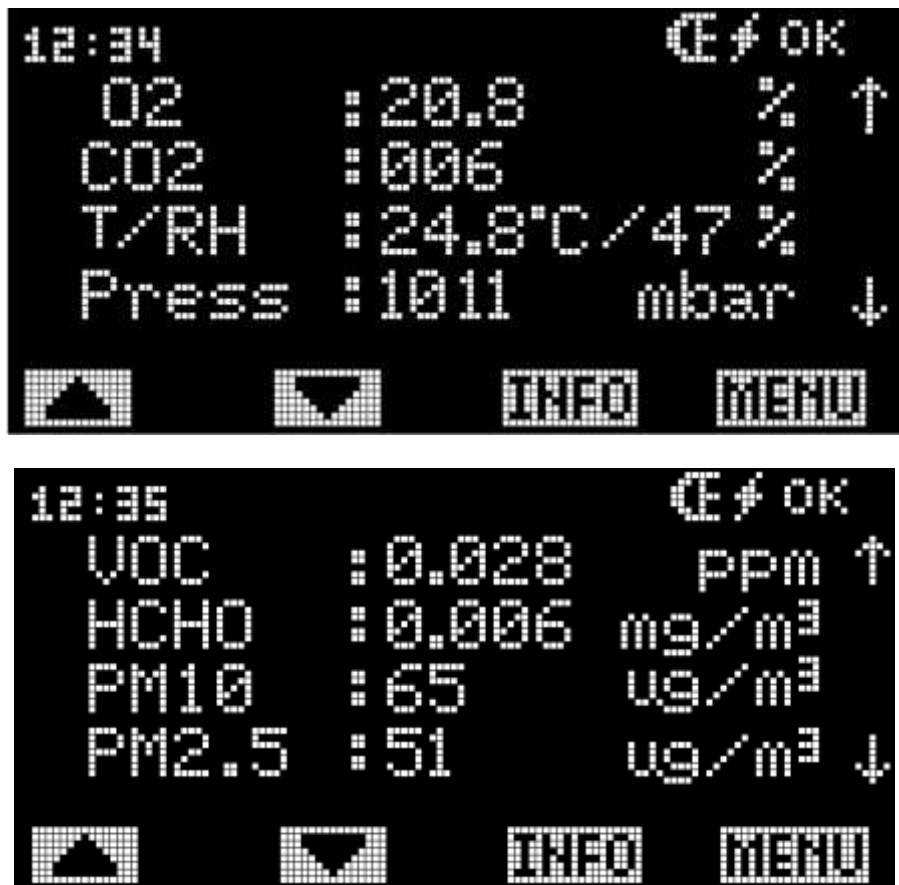
Step 1: Turn the power toggle switch to "ON" position, at the moment, the equipment will start up automatically (with built-in chargeable lithium battery, the display screen will be on, and the buzzer will give a short beep; Step 2: Connect the device with the external 5V adapter.

3.5 Main Interface Instructions


| | |
|---|--|
|  | Key 1: UP key |
| | Key 2: DOWN key |
| | Key 3: "INFO" key: Press this key to enter "System information interface" to view the relevant information on the equipment; |
| | Key 4: "MENU" key: Press this key to enter "Setting interface" to set the equipment parameters; |

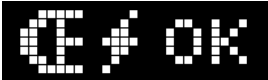









Interface:

The main interface will pop up after the device is started up. As shown in the following figure:



Display Instructions:

| | |
|---|----------------------------|
|  | Current time: hour: minute |
|---|----------------------------|

| | |
|---|--|
|  | <p>The power supply status of the adapter is shown as follows: "OK" indicates that the power supply of the adapter is normal; "ERR" indicates that the power supply of the adapter is abnormal, and there is an audible and optical alarm (sound: The buzzer beeps; light: the icon blinks);</p> |
|  | <p>Current environmental oxygen concentration;</p> |
|  | <p>Current environmental carbon dioxide concentration;</p> |
|  | <p>Current environmental temperature and humidity;</p> |
|  | <p>Current environmental atmospheric pressure;</p> |
|  | <p>Current environmental VOC;</p> |
|  | <p>Current environmental formaldehyde value;</p> |
|  | <p>Current environmental PM10 value;</p> |
|  | <p>Current environmental PM2.5 value;</p> |
|  | <p>Button prompt.</p> |

Operation Instructions of Buttons:

Key 1: The system displays the previous page of main interface when the key is pressed;

Key 2: The system displays the next page of main interface when the key is pressed;

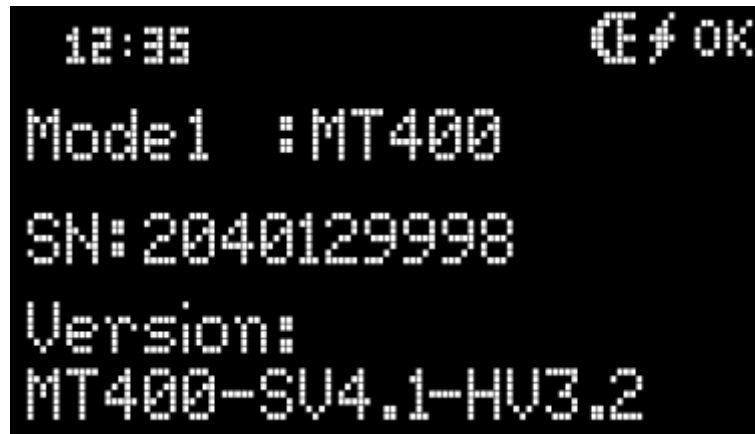
Key 3: Press it to enter "System information interface";

Key 4: Press it to enter "System parameter setting interface".

3.6 System Information

After the equipment is normally started up and enters the main interface, you can press the "INFO" button (Key 3) on the main interface to enter the "System information interface", as shown in the picture

below:



Display Instructions:

| | |
|----------------------|--|
| "Model" in Row 1 | Equipment model; |
| "SN" in Row 2 | Unique serial number of equipment; |
| Row 6 and 7: Version | Software/ hardware version of equipment; |

Operation Instructions of Buttons:

Key 1: The system returns to the main interface when the key is pressed;

Key 2: The system returns to the main interface when the key is pressed;

Key 3: The system returns to the main interface when the key is pressed;

Key 4: The system returns to the main interface when the key is pressed;

3.7 Parameter Setting

3.7.1 Enter setting interface

After the equipment is normally started up and enters the main interface, you can press the "MENU" button (Key 4) on the main interface to enter the "Setting interface" which include 6 items. As shown in the following figure:





3.7.2 "1.SET DATE TIME"

Note: This option is used for setting the current operating date and time of the equipment;

Select "1.SET DATE TIME" on the setting menu, and then press the "OK" button (Key 3) to enter the setting interface. As shown in the following figure:



Parameter Description:

| | |
|--------------|----------------------------------|
| "YY/MM/DD" | Set date (year, month, day); |
| "hh: mm: ss" | Set time (hour: minute: second); |

Operation Instructions of Buttons:

Key 1- "+" key: Press this button to add the current set value by 1;

Key 2- "-" key: Press this button to reduce the current set value by 1;

Key 3- ">>" key: When you press the button, the cursor will move to the next set value;

Key 4- "OK" key: When you press the button, the system will automatically save parameters and return to the setting interface.

3.7.3 "2.SET TEMP"

Note: This option is used for temperature calibration;

Select "2.SET TEMP" on the setting menu, and then press the "OK" button (Key 3) to enter the setting interface. As shown in the following figure:



Operation Instructions of Buttons:

Key 1- "+" key: Press this button to add the calibration value by 0.1 °C and press and hold this button to add the calibration value by 1 °C;

Key 2- "-" key: Press this button to reduce the calibration value by 0.1 °C and press and hold this button to reduce the calibration value by 1 °C;

Key 3- "OK" key: When you press the button, the device will perform calibration and the system will automatically save parameters and return to the setting interface;

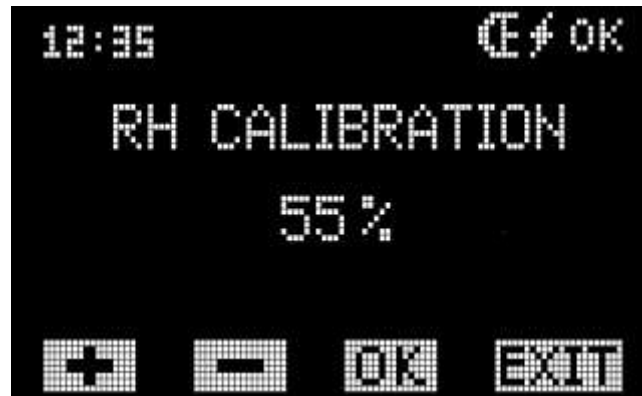
Key 4 - "EXIT" key: When you press the button, the system directly returns to the setting interface.

Note: Only single point temperature calibration is available.

3.7.4 "3.SET RH"

Note: This option is used for humidity calibration;

Select "3.SET RH" on the setting menu, and then press the "OK" button (Key 3) to enter the setting interface. As shown in the following figure:



Operation Instructions of Buttons:

Key 1- "+" key: Press this button to add the calibration value;

Key 2- "-" key: Press this button to reduce the calibration value;

Key 3- "OK" key: When you press the button, the device will perform calibration and the system will automatically save parameters and return to the setting interface;

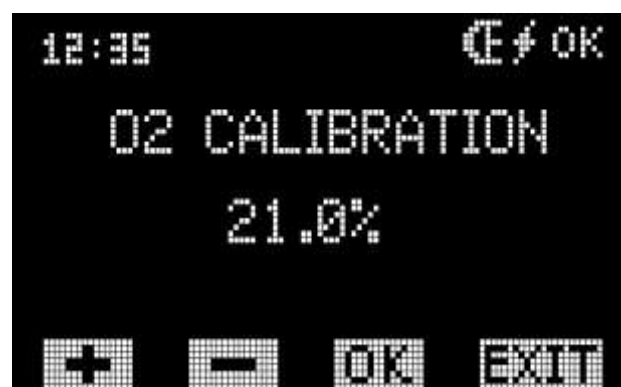
Key 4 - "EXIT" key: When you press the button, the system directly returns to the setting interface.

Note: Only single point humidity calibration is available.

3.7.5 "4.SET O2"

Note: This option is used for oxygen concentration calibration;

Select "4.SET O2" on the setting menu, and then press the "OK" button (Key 3) to enter the setting interface. As shown in the following figure:



Operation Instructions of Buttons:

Key 1- "+" key: Press this button to modify the calibration value (supporting calibration of two points: 0% and 21%);

Key 2- "-" key: Press this button to modify the calibration value (supporting calibration of two points: 0% and 21%);

Key 3- "OK" key: When you press the button, the device will perform calibration and the system will automatically save parameters and return to the setting interface;

Key 4 - "EXIT" key: When you press the button, the system directly returns to the setting interface.

Note: This device supports two-point O₂ calibration, namely 0% and 21%.

3.7.6 "5.SET VOC"

Note: This option is used for VOC calibration;

Select "5.SET VOC" on the setting menu, and then press the "OK" button (Key 3) to enter the setting interface. As shown in the following figure:



Operation Instructions of Buttons:

Key 1- "+" key: Press this button to add the calibration value by 0.001 ppm and press and hold this button to add the calibration value by 0.01 ppm;

Key 2- "-" key: Press this button to reduce the calibration value by 0.001 ppm and press and hold this button to reduce the calibration value by 0.01 ppm;

Key 3- "START" key: Press the button to start the calibration and display the calibration results: "OK" indicates that the calibration is successful and "ERR" indicates that the calibration fails;

Key 4 - "EXIT" key: When you press the button, the system directly returns to the setting interface.

Note: The VOC calibration shall be performed by professional engineers. Users are not allowed to perform such calibration by themselves.

3.7.7 "6.SET DATA FREQ"

Note: This option is used for setting data upload frequency;

Select "6.SET DATA FREQ" on the setting menu, and then press the "OK" button (Key 3) to enter the setting interface. As shown in the following figure:



Operation Instructions of Buttons:

Key 1- "+" key: Press this button to add the set value;

Key 2- "-" key: Press this button to reduce the set value;

Key 3- "OK" key: When you press the button, the system will automatically save parameters and return to the setting interface;

Key 4 - "EXIT" key: When you press the button, the system directly returns to the setting interface.

4 Notices for Use of Equipment



Do not use it in the environment below 0°C.

- All calibrations shall be performed by professional engineers. Users are not allowed to perform such calibration by themselves.
- The transmission distance of MT400 is limited and should generally not exceed 3 rooms. If the walls of the rooms are made of metal materials, it is better to install a data receiver host in each room;
- MT400 is not waterproof, so the equipment shall not directly contact with liquid water;
- MT400 is equipped with polymeric battery and shall be not allowed to contact the high temperature environment to prevent battery damage.
- Be sure to remember that the high-concentration VOC gas (such as direct injection of alcohol) can be used for testing VOC, for the high- concentration VOC gas will contaminate the sensor. It is recommended to use an ordinary permanent marker for the test. Remove the cap of the marker and place the marker next to the sensor for 30 seconds to check whether the data changes.

5 FCC Warning

15.19 Labeling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)

This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

15.21 Information to user.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



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